UNITED STATES DEPARTMENT OF AGRICULTURE
OFFICE OF PUBLIC ROADS AND RURAL ENGINEERING
Washington, D. C.

FIELD LETTER No. 26.
April 15, 1917.

Logan Waller Page, Director.
P. St. J. Wilson, Chief Engineer; J. E. Pennybacker, Chief of Management; Samuel Fortier, Chief, Irrigation Investigations; S. H. McCrory, Chief, Drainage Investigations; E. B. McCormick, Chief, Rural Engineering; Prevost Hubbard, Chief, Tests.

FEDERAL AID

The 1917 legislation, either merely assenting to the Federal Road Act, or giving such assent coupled with other legislation, has been considered by the Department and found satisfactory in the following states: Arizona, Arkansas, Kansas, Maine, Massachusetts, Missouri, North Dakota, Oregon, South Dakota, South Carolina, Utah, and West Virginia.

The legal obstacles in the way of cooperation by the State of Mississippi have been so clarified that cooperation in that State is now practicable.

There seems to be some misunderstanding in the field concerning the submission of a project, which on account of its size or because of the remaining balances from the apportionment for a fiscal year, extends over the succeeding fiscal year. Such overlapping projects are being favorably received and acted upon, and will be encountered in almost every State when the small balances for a fiscal year are being used up. The only requirement necessary is that the project be submitted and acted upon under the time requirements for the last fiscal year's allotment concerned in the project.

The Department has considered the question of whether project statements may be approved, project agreements entered into, and a state authorized to advertise for bids, award contracts, and begin work subsequent to the issuance of the certificates of apportionment to the States and prior to the beginning of the fiscal year for which the apportionment is made. It has been decided that after the certificate of apportionment has been filed, and prior to the beginning of the next fiscal year, projects may be approved and project agreements entered into, but that no part of the road for which Federal Aid is contemplated under such a contract should be constructed prior to the beginning of the fiscal year for which the appropriation involved was made. It has also been decided that no project statement should be approved or project agreement entered into, involving the appropriation for any fiscal year, prior to the filing of the certificate of apportionment for that year.

Project agreement, California Project No. 1, was executed by the Secretary on March 29. This was the first project agreement signed by the Secretary. On April 7 the project agreement for California Project No. 3 was signed by the Secretary.

California Projects Nos. [illegible] and 5 have been taken up for reconsideration since receipt of final information as to carrying mails over the portion of the roads involved not now used for that purpose, and are now before the Secretary.

Project agreements covering Pennsylvania Projects Nos. 1 and 3, fiscal year 1917, have been executed by the Highway Department, and are now before the Secretary for his action.

The Highway Commissions of Maine and Massachusetts have submitted 5-year programs of work to be undertaken in cooperation with this Department.

Three projects were submitted from North Carolina, and arrangements have been made for early inspection.

The Minnesota State Highway Department submitted eight projects. The legislature abolished the Highway Commission and offices of State Engineer and Secretary, creating the office of Highway Commissioner and providing for deputies.

Projects in Bullock, Butler, Talladega, Mobile, Lauderdale, Etowah, Dale, Pike and Escambia counties, Alabama, were under consideration during the month in District No. 8.

Bills are still pending in the legislatures of Michigan and Illinois to amend present road laws to conform with the requirements of the Federal Aid Road Act. The Governor of Kentucky will request the legislature of the State to amend the road laws as soon as the question of taxation is disposed of. In Indiana, a State Highway Department was created and will be in full force and effect abou[illegible]

The Colorado Legislature passed bills regarding motor vehicles, legislative assent, and a new highway law, all of which await the signature of the Governor.

Wyoming enacted a motor vehicle law and created a highway department, which includes an assent clause.

The legislature of Utah voted a $2,000,000 bond issue in addition to assent to the Federal Aid Road Act. A motor vehicle law passed and a change was made in the personnel of the State Highway Commission.

The legislature of Wisconsin continued in session and road legislation which has passed the Senate has gone before the House. The State Highway Engineer states that several projects will begin about May 1 and that considerable activity may be expected in his State.

In North Dakota there was created a State Highway Department, composed of the Governor, the State Engineer, the Commissioner of Agriculture and two members to be appointed by the Governor. Legislation was passed providing for a highway fund to be raised from licensing automobiles, with a provision that the counties raise the same amount. This will provide more than a sufficient amount to match the Federal aid apportionment, its chief difficulty appearing to be that it must be divided among all the counties of the State.

The South Dakota legislature passed an act which provides for a State Highway Commission to consist of the Governor, the State Engineer and another member to be appointed by the Governor, the appointed member to ba a practical highway engineer. A highway bill was also passed appropriating $250,000, apportioned during the fiscal years ending June 30, 1917, 1918 and 1919, and providing that 80 per cent of the money raised in any county for the highway fund shall be used in the construction and maintenance of highways in that county.

Road legislation passed the Senate in Iowa and the House in Nebraska.

Legislation creating a State Highway Commission and providing for a State Highway Engineer was passed in Texas, and probably in Oklahoma, but no authentic information has as yet been received by the District Engineer regarding the latter State.

A delegation from the Arkansas Highway Commission met District Engineer, Fauntleroy, in Washington, D. C., and discussed the highway act recently passed by the legislature of that State with the Chief Engineer. The District Engineer also inspected Arkansas Project No. 1 and attended the opening of bids for the work. All bids were rejected and new ones called for. He also made an inspection of two roads in Lawrence County, Arkansas, and [illegible] proposed Federal aid projects in Louisiana.

The District Engineer of District No. 9 gave considerable attention to the plans for Federal aid cooperation with the officials of the New York State Highway Department, regarding vouchers, estimates and payments, and with reference to proposed legislation in that State. He also inspected roads in New Jersey, including a road constructed by convict labor north of Princeton. Legislation and inspections in Delaware, Connecticut and Massachusetts also claimed a large part of his time during the month.

Forest Roads.

Preparation of plans for the Elk Creek and McKenzie Projects, Oregon, and of the Little White Salmon and Loup Loup Projects in Washington, are under way.

A survey party left Albuquerque, New Mexico, the last week of the month for Clifton, Arizona, where the survey of the Clifton-Springerville Road will be begun.

Some work was done on the design and tracings for the Orleans-Somes Bar Section (a Section 6fproject) and two weeks of the month were spent in outlining a program of construction on the Bautiste Road, Cleveland National Forest, California. Work was also done on the design and tracings of the plans for the Salmon River Road, Klamath National Forest, and a request made on the Washington Office for plans for a bridge across Salmon River. A preliminary investigation of the San Dimas Road, Angeles National Forest, California, was made, and two men have been employed during the month on the maintenance work of the Trinity River Road, Trinity National Forest.

Work in the three Forest District branch offices at Missoula, Denver and Ogden was confined to the preparation of plans and profiles and computations on proposed forestry projects. District Engineer Hewes met District Engineer Whittaker at Missoula on March 1 and the plans prepared in Missoula for work in District No. 1 were examined and tentative specifications for National Forest Roads outlined.

The District Forester has made application for a preliminary investigation of a proposed road in the Superior National Forest in Cook County, Minnesota, and this work will be undertaken as soon as practicable.

The District Engineer of District No. 6 was instructed by the Washington Office to make a reconnaissance of the Russellville-Pleasant Hill Road in Pope and Newton counties, and in the Ozark National Forest, Arkansas.

In District 10, two forest projects have been submitted to the District Engineer for preliminary investigation and report -- one in Virginia and one in North Carolina. The District Engineer spent four days in the inspection of the Pine Mountain-Highlands Project in North Carolina and Georgia.

CONSTRUCTION

Object-Lesson Roads.

L. L. Winans, J.H.E., reports that citizens of Shawnee and Tecumseh, Oklahoma, and farmers in that locality have organized for the construction of a road which, in addition to the road already finished by the convict force, will form a continuous highway through Pottawatomie County and will be a part of a complete link in the Ozark Trail.

R. E. Royall, J.H.E., completed the object-lesson road at Alma, Arkansas, and was instructed to report to O. N. Powell, H.E., at Albuquerque, New Mexico, to assist in Federal Aid District No. 2.

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and was instructed to report to C. . Powell, Hugo, Oklahoma, [Engineer,]
to assist in Federal Aid District No. 4.

Experimental Roads.

B. F. Heidel, S.H.E., Mack Galbreath, J.H.E., A. L. Hooper, J.H.E., and A. C. Dunn, J.H.E., spent several days on a survey of the Columbia Pike in Alexandria and Fairfax counties, Virginia, in anticipation of experimental construction on that road during the coming fiscal year.

Post Roads.

A. L. Hooper, J.H.E., has returned to Dubuque, Iowa, to resume construction of the Dubuque County Post Road under the direct supervision of the District Engineer. The contractor's force was instructed to begin actual construction work April 9.

H. C. Wells, S.R.C., completed the assignment in Glynn County, Georgia, on March 15 and was assigned to assist District Engineer Fauntleroy, at Fort Worth. He has been engaged in office work and on the inspection of metal culverts on the Texas Post Road.

Arrangements have been made to put new gravel on top of the old post road at Cook Hill, Forsyth County, North Carolina, for a distance of 250 feet.

ROAD MAINTENANCE.

Washington-Atlanta Highway.

V. E. Towles, H.E., reported early in March that water at Thompson's Creek south of Cheraw, South Carolina, was over the Highway; also that the Fayetteville roads had suffered more than those south of that point, and that across Harnett County the roads were rough, but passable.

After one year's trial with the convict squad system for maintenance, Smithfield Township (Johnston County, North Carolina) has returned to the daily patrol system. Granville County has doubled its patrol force on the Washington-Atlanta Highway after [illegible] years' trial, D. H. Winslow, S.R.C., reports. He states, under date of March 24, that, due to conditions in Dinwiddie County, Virginia, the Highway still was impassable between Cochran, Brunswick County, and Petersburg. The best route northward at that time was South Hill to Lawrenceville to Emporia to Petersburg. The road between Petersburg and Richmond also was in bad condition.

Geo. D. Marshall, S.R.C., informed the Office on March 31 that plans were perfected to make approach and new location at the Wilkes County line and construct the bridge at Wilkes-Oglethorpe line. The road is in good condition most of the way from Thomson (Georgia) to Columbia (South Carolina).

Central Highway.

W. L. Spoon, S.H.E., reported that heavy work has been done on the Central Highway, but owing to weather conditions early in March the roads were badly broken. Later he stated that except from Guilford College Station to the Forsyth County line, the roads were all in fairly good condition and on March he wrote that the section west of Cleveland (Rowan County) was passable and so would be in good condition.

COUNTY ROAD SYSTEMS.

J. T. Schuyler, S.H.E., on March 30 began the work of planning a system of roads for Skamania County, Washington.

An investigation preparatory to a report for a county system for Bighorn County, Wyoming, was begun March 15 by A. E. Falon, H.E.

H. K. Craig, H.E., revised his reports on Williamson and other counties in Texas, worked on reports for Travis and Reeves counties, Texas, and made an inspection in Eastland County, Texas, with a view to preparing a report and estimate of the cost of improving the Fort Worth-El Paso Highway. He also inspected and prepared a report on the Fort Worth-El Paso Highway in Nolan County, Texas.

W. A. Crossland, S.H.E., made a report and recommendations concerning road improvement in Elmore County, Alabama.

IRRIGATION INVESTIGATIONS.

Administration.

A. T. Michelson, formerly of the United States and Porto Rico Reclamation Services, has been appointed Irrigation Engineer in the permanent force of the Office.

Professors E. W. Schroder and L. W. Turner of Cornell University, have been appointed collaborators to direct the experiments at Ithaca with the Venturi flume, developed by V. M. Cone, I. E.

Appliances and Equipment.

V. M. Cone, I. E., and R. L. Parshall, A.I.E., made a reconnaissance survey March 27 for a spillway for a small farm reservoir near Windsor, Colorado. A proposed design of this spillway has been made. It is to be constructed of concrete, crest 50 feet long, flashboards on crest of spillway, with a 4 foot drop in the chute leading from the crest of spillway. The section above the drop will be trapezoidal with 8 foot bottom, section below drop to be 16 feet at bottom with side slopes of 1 to 1.

R. L. Parshall, A.I.E., spent a part of the month on the design of two different types of current meters. In one design, the main idea was to develop an instrument smaller than the type now used. The new type has two contacts which make it possible to change the rate of counting the revolutions by simply throwing a switch, battery and switch being mounted at the upper end of the meter rod. The meter has no exposed wires or binding posts and the meter rod has blind joints. This type of meter is essentially a rod meter and is intended to be used for small flows. Another type, similar to the Ott, has been designed with horizontal shaft and a propeller turbine. In this new design there are several improvements which are thought to be desirable. This type of meter can be used either as a rod or cable suspension meter. A third design is planned but is being held back on account of other work. The two designs mentioned have been sent to E. J. Hoff, for criticism.

F. W. Stanley, I.E., has completed the design of a new valve for use with underground terra cotta pipe lines in irrigation systems in the eastern States. In use the valve is connected to a terra cotta riser and is set 6 inches below ground, so that cultivation may go on over it. This plan economizes space and and eliminates trouble with pipe breakage. More than 100 of these valves have been made and will be tried out on irrigation farms in Florida.

Pumping for Irrigation.

Correcting a note in the last field letter, G. S. Knapp, agent, reports continuation of the work on the test well in the bottom of the old well at the Garden City, Kansas station late in February. Twenty-four feet of 18-inch casing purchased to push into the bottom of the present well has been sunk only about 10 feet, where it appears to be hung on some obstruction. Owing to the lateness of the season and the extreme dry weather this casing will be left in its present position until a sufficient supply of water is available, when an effort will be made to get it into its proper position.

Use of Water.

V. M. Cone, I. E., spent March 22 in Colorado Springs advising the Glen Eyrie Development Company and securing information upon which to plan a distributing system for approximately 500 acres adjacent to Colorado Springs, to be subdivided into garden tracts. This work will call for formulating plans for a water company to take over the Glen Eyrie water rights and reservoir and distributing system which will be used for the garden tracts. It will also include the development of water from underground sources evidenced by springs now.

An attempt was made to open the hydraulic laboratory at Fort Collins, Colo., the last week in March, but the 35th snow storm of the season prevented this. The rating station was put into shape, however, and 16 current meters and 1 pitot tube were rated. Preparations for field work on the reservoir surveys was completed although weather conditions did not permit constant outside work.

Laws, Regulations and Customs.

Frank Adams, I. M., attended a meeting of the California Irrigation District Association at Sacramento at which pending legislation affecting irrigation districts was discussed, and during the last week of the month assisted in working over irrigation district bills before the California assembly.

DRAINAGE INVESTIGATIONS.

Administration.

From March 20-28, S. H. McCrory was on a trip of inspection. He conferred with D. G. Miller and Dan S. Helmick at the Chicago office regarding the report and plans they are preparing on the Clear Boggy Drainage District, Oklahoma. At the same time he arranged with Mr. Helmick to collect further data on pumping plants in the Upper Mississippi Valley this spring. At Jackson, Tennessee, he

conferred with C. E. Ramser and A. L. Lane on the run-off work in western Tennessee. At Memphis, he discussed with O. G. Baxter and members of the Morgan Engineering Company the advisability of making investigations relating to drainage ditch maintenance on ditches in Drainage District No. 9, Mississippi County, Arkansas. Arrangements have been made with the Commissioners for making such investigations during a series of years on a number of ditches in this district. Mr. Baxter will have charge of these investigations. On March 27 Mr. McCrory met Lewis A. Jones at Corinth where an examination of ditches in the Tuscumbia Drainage District disclosed that none would give sufficient results to warrant undertaking maintenance studies. On April 12, at New Orleans, Mr. McCrory addressed the Cut-Over Lands Conference of the South on "Some Factors to be Considered in the Drainage of Cut-Over Lands." He conferred with J. V. Phillips and F. G. Eason regarding the work in Georgia and South Carolina, and stopped at King Mountain to arrange for maintenance work in the Piedmont section of North Carolina.

J. C. Carpenter, who left the Department several years ago to accept employment in the Philippine Service, has returned to the Office in the capacity of Drainage Engineer. He is assisting J. V. Phillips in the survey of the Allatoona-Proctor Drainage District, Georgia.

Studies have been started to determine the relative merits of inexpensive ditching plows for constructing tile drains; also studies relating to the merits and cost of vertical drains. Both are being made at the same time by Fred F. Shafer, who now is in the middle west.

Farm Drainage.

J. R. Haswell spent the latter part of March and early part of April attending to requests from farmers in Virginia and Maryland. On March 19-20, he appeared before the Circuit Court of Wicomico County, Maryland, as a witness in a case involving some alleged inferior cement tile which were being offered for sale to farmers on the Eastern Shore of Maryland.

D. L. Yarnell and [illegible]. Levy have computed tentative formulae for computing the capacities of tile drains based on experiments at the Arlington Farm. They are now engaged in collecting data on the flow in large tile that are parts of drainage systems in actual operation. The data thus collected will be used to check against the formulae deduced from the experiments on the Arlington farm. At present Messrs. Yarnell and Levy are operating in Iowa.

W. N. Hall devoted the latter half of March to making field surveys on farms in West Virginia.

The following cost data were furnished by R. N. Corbett & Sons, Waverly, West Virginia, on the construction of a drainage system designed by Fred F. Shafer for a portion of their farm:

Labor, digging and laying tile, 79-1/3 days at $1.50	$119.00
2 teams at $4.00 per day and 3 men filling ditch.....	12.50
Hauling tile, man and team, 4 days at $4.00	16.00
Filling cross ditches and bends, 1 man 2½ days at $1.50 ...	3.75
6193 feet 4" tile at $20.60 per M	127.57
280 " 6" " " 36.00 " "	10.08
185 " 5" " " 28.25 " "	5.23
4 pieces 4x4 = 72 cts; 5 pieces 6x4 = $1.50; 4 pieces 5x4 = 88 cts.	3.00
Total	$297.13

Reports Transmitted:

Berry Hill Plantation, (Outlets) Halifax Co., Va., by Fred F. Shafer;
Ashley Hall Plantation, St. Andrews Parish, S.C., by F. G. Eason;
Murray Farm, McCracken Co., Ky., by Fred F. Shafer;
Arlington Farm, Alexandria Co., Va., by D. L. Yarnell.

In addition to the above reports there were 17 letter reports by Messrs. Lynde, Hall, Hart, Baxter, Baker, Haswell, Shafer, and Jones transmitted.

Reports Received:

East View Plantation, Manteo, Va., by W. N. Hall;
Dabbs-McBride Tract, S. C., by S. W. Frescoln.

Overflowed Lands.

F. G. Eason has completed the survey of Walterboro Drainage District No. 1. He is preparing a plan and report.

J. R. Haswell on April 3 met the commissioners of Wicomico and [illegible]ster counties, Maryland, for the purpose of discussing drainage along the Pocomoke River in that State. The commissioners of these counties are cooperating with landowners in the proposed Pocomoke River Drainage District, Delaware.

Geo. R. Boyd and Q. C. Ayres have returned to the Washington Office. Enroute to Washington Mr. Boyd spent a day at Toledo to examine swamp and overflowed areas adjacent to Toledo.

J. V. Phillips, assisted by J. C. Carpenter, is engaged in a survey of lands in the Allatoona-Proctor Drainage District, Georgia.

Reports Transmitted:

Proposed Newman's Branch Drainage District, Sumter and Clarendon counties, S. C., by S. W. Frescoln;
Big Clouds Creek Drainage District, Oglethorpe County, Ga., by J.V. Phillips;
Proposed Moccasin Branch Drainage District, Bamberg County, S.C. by S. W. Frescoln;
Departee Creek Drainage District, Jackson and Independence counties, Ark., by O. G. Baxter.

Reports Received:

Proposed Douglas Drainage District, Philips County, Ark., by W.B. Booth.

Swamp Land.

Reports Received.

Blue Girth and Beech Creek Swamps, Dallas County, Ala., by L. A. Jones.

Cost, Operation and Maintenance.

A report on the Cost and Operation of Drainage Pumping Plants in Louisiana was submitted by C. W. Okey and W. B. Gregory. This report covers the information on that subject to date and it will be offered for publication in the Journal of Agricultural Research.

Chas. Kirschner was at the Montgomery office during the week ended April 14 to discuss pumping data and to arrange for the coming season's work on pumping studies.

Organization, Financial and Legal.

H. S. Yohe and L. A. Jones conferred with the attorney and commissioners of the Luxappalila Drainage District, Fayette and Lamar counties, Alabama. Particular attention was given to the organization of the district and its administration, and suggestions were offered touching on the financial side of the district.

TESTS AND RESEARCH.

Projects:

Administration.

Josef Gendt, of Stockholm, Sweden, and I. B. Mullis, of the North Carolina State Highway Commission, finished the courses they were taking in the Office laboratories.

Messrs. Leavitt and Pollard, Student Assistants, resigned, the former returning to his work with the Maine State Highway Commission, while the latter secured a position as inspector of bituminous construction with the Kentucky State Highway Commission.

On March 17, Mr. Hubbard represented Mr. Page at a meeting of Committee E-5 of the American Society for Testing Materials in New York City.

Routine Tests and Analyses.

Five samples of bituminous material were examined in the chemical laboratory in March; 52 samples of rock, sand, gravel, etc., were examined in the physical laboratory, and 47 samples were examined and classified in the microscopic laboratory.

Research Upon the Properties of Dust Prevention and Road Binders.

A paper upon "The Effect of Exposure on Some Fluid Bitumens" was complete by Messrs Reeve and Lewis, and has been accepted for presentation at the Kansas City meeting of the American Chemical Society. It will probably be published later in the Journal of Industrial and Engineering Chemistry. A paper upon "A New Consistency Tester for Viscous Liquid Bituminous Materials" is being prepared by Messrs. Hubbard and Pritchard, for presentation at the Annual Meeting of the American Society for Testing Materials. This instrument has now been perfected so that it is available for testing all types of bituminous materials used for the hot surface treatment of highways.

Work has been resumed with the experimental oil refining plant at Arlington Farm, and the trial run made at the topping plant proved successful in so far as the operation of the plant is concerned.

Considerable work was done in connection with standardizing the method for determining the capacity of bituminous solutions for retaining colloidal matter in suspension, and interesting preliminary results were obtained in connection with the suspension capacity of Mexican petroleum residuum and Trinidad asphalt, previously freed from all suspended matter.

Nonbituminous Road Material Investigations.

As a result of considerable discussion of the report presented before the American Society of Civil Engineers upon impact tests upon sections of brick pavement, it has been decided to conduct impact tests on pavements in the field. A testing machine has been designed which will consist essentially of a 50-pound hammer with a spherical head, which will be allowed to fall directly upon the pavement until failure occurs. Guide rods and a cross-head make possible a variation in the height of fall. A tripod supports the apparatus, making it portable.

Data in connection with the effect of controllable variables upon the toughness test is progressing, and a paper upon this subject will be presented at the Annual Meeting of the American Society for Testing Materials in June.

Experimental Bituminous Road Construction and Maintenance.

Mr. Reeve cooperated with Mr. Peirce in an inspection of the Rockville Pike and Falls Road with reference to the maintenance which will be required during the coming year. Mr. Hubbard cooperated in a similar manner with Mr. Peirce, Mr. James, and Mr. Eldridge in an inspection of the Washington - Alexandria experimental road.

Concrete Investigations.

A number of 6-inch concrete specimens which had been cured for two years in the silos at the Beltsville Experimental Farm with the object of finding suitable means of protecting concrete against the disintegrating action of silage, were removed and their compressive strength determined. The results of this investigation will be published.

A reinforced concrete slab of 13 in. effective depth, 16 foot span, and 32 foot width, was tested under eccentric loads for the purpose of determining the severity of stress conditions in a slab, occasioned when a heavy load traverses the side of a bridge. This condition would occur, for instance, when a roller backs against the balustrade to take on water. The results indicate that with the worst conditions that can happen the effective width is reduced to 0.4 of the span length, instead of 0.7 of the span length as in the case of central loading. The results are now being worked up in a paper for presentation before the American Society for Testing Materials.

At the request of the Virginia State Highway Commission, Messrs. Goldbeck and Jackson inspected a concrete road between Hopewell and Petersburg, for the purpose of determining, if possible, the cause of failure of certain sections. A report is now being prepared.

Soil Pressure Investigations.

Soil pressure investigations were conducted on fills of sand 6 in., 12 in., 24 in., and 36 in. in depth. Concentrated loads have been applied to the top of these fills on two sizes of bearing blocks, 8 in. and 3½ in. in diameter. Loads up to 5,000 pounds have been applied on the large bearing blocks and the distribution of these loads at the bottom of the fills has been measured. The curves thus obtained, showing the distribution of load, are extremely regular and calculations for the reaction measured by the soil indicating devices show that the reaction thus measured very closely equals the load applied. This definitely proves the practicability and accuracy of the soil pressure measuring device which has been developed. The results of these measurements are being prepared in a paper for presentation before the American Society for Testing Materials at its coming annual meeting.

RURAL ENGINEERING.

The following work has been completed for other bureaus of the Department:

Blueprints and specifications for a group of buildings to be erected at Huntley, Montana, for bureaus of Plant and Animal Industry;

Drawings and bills of materials for a herdsman's cottage, Huntley Field Station;

Blueprints and specifications for a skylight hog house to be erected at the Huntley Field Station. (These drawings will also be used for general distribution.);

Specifications for the buildings to be erected at the Ardmore Field Station mentioned in the last field letter. These are to be used by the bureaus of Animal and Plant Industry for the erection of the buildings at Dalhart, Texas;

Drawings and specifications for alterations to old buildings on the Arlington Farm for use of color investigation laboratory. Drawings for the addition to this building are nearing completion;

Sketches were prepared for a small laboratory building to be erected at Chula Vista, California, for the Bureau of Plant Industry.

The following work for general distribution has been completed:

Bills of materials for 28 sizes of wooden hoop silos;

Drawings for a single row and half-monitor hog house.

Floor plans, elevations, and perspective of the laboratory building to be erected on the Arlington Farm for this Office were prepared.

Miscellaneous designs submitted by other bureaus have been submitted for approval.

Drawings for general distribution have been started for a general barn.

Designs have been made and detailed drawings prepared for reinforced concrete cisterns of various sizes. It is expected that these will be ready for distribution shortly.

Designs are in progress for the following:

(1) An automatic silo tamper.
(2) A portable spraying outfit to be used by the Bureau of Plant Industry in conducting certain experiments.
(3) An apparatus to be used in testing the strength of wooden hoops for silos.

Much correspondence has been received covering the following subjects. Each request has received attention, and where the request was such as to require its own particular solution, special pains have been taken to prepare the answer in form for general use: Concrete construction, oil-cement concrete, house heating systems, water supply and storage problems, water supply tanks, ice house design and construction, ventilation, power development from streams, windmill power, [illegible] electric light and power plants, gas and alcohol engines, thawing pipes by electricity, pumping problems, welding processes, splicing and repairing steel cables, floating water power plants, care and repair of harness, manufacture of emery wheels and stones, and effect of tire width on draft.

ADDRESSES, CONFERENCES, INSPECTIONS, ADVICE, EXHIBITS AND LECTURES.

V. E. Towles, H. E., attended meetings of the Boards of Commissioners of Richmond County, North Carolina, at Rockingham, and of Cumberland County, North Carolina, at Fayetteville.

B. F. Heidel, S.H.E., and D. H. Winslow, S.R.C., held a conference with the Commissioners of Craven County, North Carolina, at Newbern, on March 12 and 13, concerning the advisability of some brick road construction in that county. During the month Mr. Heidel, in addition to his work at the Washington Office, also filled short assignments at Woodside and Chevy Chase, Maryland, with regard to proposed street improvements at those places.

D. H. Winslow, S.R.C., inspected and gave advice in regard to roads in Cypress Creek Township, North Carolina, and attended a board meeting at Garland, North Carolina, on March 9.

George D. Marshall, S.R.C., held a conference at Athens, Georgia, regarding a consistent patrol maintenance in Clark County.

A general lecture on road building was delivered at the Y. M. C. A., Washington, D. C., on the evening of March 28, by M. O. Eldridge. The approval of the Secretary was obtained for lectures as follows: E. O. Hathaway, Minot, North Dakota; J. T. Bullen, Tallahassee, Florida, April 10, Birmingham, Alabama, April 19-20.

Arrangements were made and the Secretary's approval was secured for an exhibition of road models at the Electrical Exposition to be held at Grand Central Palace, New York, October 10-20, 1917, and at a City Exposition to be held at Rochester, New York, during the week of September 3, 1917.

In March, 21 sets, containing 893 lantern slides were loaned, and 10 sets, containing 474 slides, were returned. In the same month 412 photographic prints and 38 bromide enlargements were sent out and 13 prints and 40 bromides were returned.

W. H. Lynch, S.H.E., spent the entire month at Santa Cruz, California, co-operating with the engineer of the Highway Commission of Santa Cruz County in the preparation of his report on a proposed bond issue. An election on the bond issue is planned to be held about May 1.

District Engineer Voshell conferred with Jackson County, Indiana, officials and members of the Commercial Club of Seymour, Indiana, on the assignment of an Office engineer to cooperate in the construction of some concrete roads.

W. H. Rhodes, H. E., filled an inspection and advice assignment at Rock Hill, South Carolina, during the month, in addition to his other work.

W. A. Cross, Jr., S.H.E., spent three and one-half days on a trip between Gulfport and Jackson, Mississippi, assisting in the promotion of the Mississippi Centennial Highway Work.

L. M. Winsor, agent, addressed the Salt Lake City, Utah, Commercial Club March 2 on Irrigation Principles as applied to Irrigation of 1-acre Lots. He spoke at Nephi, Utah, March 13 on Pumping for Irrigation and March 14 on the Use of Water in Irrigation. At Cedar City, Utah, March 18, he addressed a meeting called to consider the merging of seven separate irrigation companies into one corporation, and on March 23, at Enterprise, Utah, he discussed the Use of Flood Waters in Early Irrigation.

R. A. Hart, S.D.E., left Salt Lake City, Utah, March 23 on a short trip to Ephraim, Manti, and Richfield, Utah, addressing a meeting at Manti March 24, at which preliminary steps for the organization of a drainage district were taken.

PUBLICATIONS.

The manuscript for the experimental convict camp bulletin has been checked over and suggestions from Dr. W. F. Draper added. It is ready to be submitted.

The checking and revising of the studies relating to State management of highways was continued during the month. Information showing in condensed form the organization and duties of highway departments, classification, construction, and maintenance of roads on which State funds are expended, and sources and distribution of State road funds, was completed for 14 States and the charts previously prepared were revised for those States in which legislation has been recently enacted.

The rough draft of the cost keeping bulletin has been completed.

R. B. Sleight, A.I.E., has submitted his second progress report on Evaporation from the Surfaces of Water and River Bed Materials, based on the experiments conducted at the Denver field laboratory. This has been accepted for publication in the Journal of Agricultural Research.

Copies of Bulletins 3 and 4 of the California Department of Engineering have been received, these being Frank Adams' report on the duty of water for alfalfa irrigation in Sacramento Valley and C. E. Tait's report on flood control and conservation in Coachella Valley, California. Copies of the former may be obtained upon application to the Berkeley office, and the latter from Mr. Tait.

Both appear in the biennial report of the State Engineering Department of California.

DECISION ON TIPS.

"Mr. L. W. Page,
Chief, Office of Public Roads and Rural Engineering.

Sir:

I beg to inform you that the Comptroller on February 27, 1917, rendered a decision to the effect that payment of Pullman or parlor car porters' tips while en route to a point in an anti-tipping State can not be allowed, as it is customary to pay porterage at the end of a trip.

After an informal interview, the Auditor has consented to pass all charges of this kind up to the date of the Comptroller's decision, and any charge of that nature which is incurred subsequent to February 27, 1917, will be disallowed.

Very respectfully,
(Signed) A. ZAPPONE.
Chief of Division."